

INTERNATIONAL SEARCH REPORT

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PCT/EP 02/01383A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G07C9/00 B60R25/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (indicated by classification symbols)

IPC 7 G07C B60

Documentation searched other than (indicated by classification symbols) to the extent that such documents are included in the fields searched

Electronic data base consulted during international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00 12850 A (LEAR CORP) 9 March 2000 (2000-03-09) abstract	1-3,5-8
Y	page 3, line 1 -page 5, line 7	4,9,10
Y	"ADAPTABLE REMOTE CONTROL DEVICE" RESEARCH DISCLOSURE, KENNETH MASON PUBLICATIONS, HAMPSHIRE, GB, no. 352, 1 August 1993 (1993-08-01), page 552 XP000395279 ISSN: 0374-4353 the whole document	4,9,10
A	DE 196 44 237 A (DAIMLER BENZ AG ;HUELSBECK & FUERST (DE)) 30 April 1998 (1998-04-30) abstract column 1, line 44 -column 3, line 14	1-10

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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Information on patent family members

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Patent document cited in search report		Publication date		Patent family member(s)	Publication date
WO 0012850	A	09-03-2000	US	2002067826 A1	06-06-2002
			WO	0012850 A1	09-03-2000
DE 19644237	A	30-04-1998	DE	19644237 A1	30-04-1998

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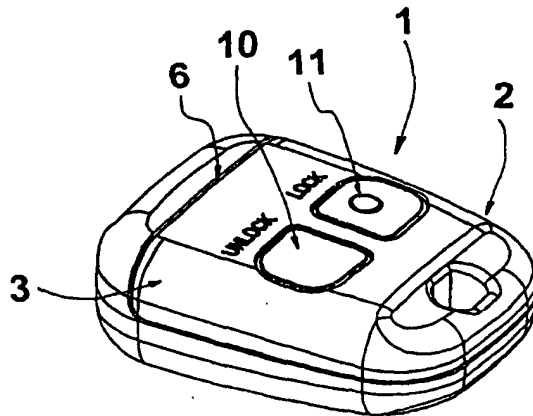
(10) International Publication Number:
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101 06 956.1 February 15, 2001 (2/15/2001) DE(71) Applicants (for all designated states except the US): **LEOPOLD KOSTAL GMBH & CO. KG [DE/DE]**; Patent Department, Wiesenstrasse 47, 58507 Lüdenscheid (DE).

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(54) Title: **KEYLESS ACCESS AUTHORIZATION CONTROL DEVICE AND IDENTIFICATION TRANSMITTER THEREFOR**

(57) **Abstract:** The invention relates to a keyless access authorization control device comprising at least two transmitting-receiving devices, which are each assigned to a defined object, and comprising one or more identification transmitters (1). Each identification transmitter (1) is designed for communicating with the transmitting-receiving devices that are assigned to the objects. The keyless access authorization control device is characterized in that each identification transmitter (1) for each object comprises a memory module containing coding that is matched to said object. The identification transmitter (1) has a modular design and disposes of a base module (2) with the electrical/electronic transmitting-receiving means necessary for communicating with the transmitting-receiving devices that are assigned to the objects. The identification transmitter (1) also disposes of at least one object module (3, 4), which is connected to the base module (2)

via an interface and which is provided with a memory module of the aforementioned type.

Keyless Authorized Access Control Device and Identification Device for It

The object of the invention is a keyless authorized access control device with at least two transceivers, each of which is assigned to a certain object, and with one or more identification devices, each being designed to communicate with the transceivers assigned to the objects.

The invention also concerns an identification device for such a keyless authorized access control device.

Keyless authorized access control devices are used where controlling access by means of a mechanical key is not desired. For example, such authorized access control devices are used in motor vehicles and in the area of the house. The intended opening of the respective object, for example the motor vehicle or the house, is done by the wireless transfer of the desired command together with a crypto code from an identification device that is carried by a user to a transceiver that is assigned to each desired object. If the transceiver associated with an object receives the code belonging to this transceiver or object, the person carrying the identification device is considered to be authorized to have access, so that access is then enabled by triggering certain actuators to unlock the motor vehicle, for example. In order to make it unnecessary to carry several identification devices when several keyless authorized access control devices are used, identification devices and corresponding authorized access control devices have been developed which allow a single identification device to be used for an authorized access control query with several objects, for example the motor vehicle, the house, and possibly the work place.

The previously known devices which allow authorized access control to be performed for several objects using a single identification device work according to the principle that all objects' transceivers react to the same crypto code. Such devices are disclosed in DE 195 33 309 A1 and DE 198 01 119 C1, for example. The object of DE 195 33 309 A1 involves composing the crypto code of a fixed code and a changing code, both of which are sent together to open a motor vehicle. When such an authorized access control device is used, in order for it also to be possible to give identification devices to persons who may only open the house, however not the motor vehicle, this authorized access control device has one or more other identification devices which transmit only one code: the changing code. By contrast, the object of DE 198 01 119 C1 is limiting use by making each identification device switchable in different functional circuits according to the usage authorization. For this purpose, the respective user of the identification device must enter a personal code in the identification device, so that the respective functional circuit is released, depending on his/her personal authorization. The identification device disclosed in this document allows several functions to be activated in relation to an object, so that a user's releasing different functional circuits for an object can trigger all or also only some of the functions which can be activated by the identification device. This blocking of individual functions, which are triggered by pressing corresponding buttons on the identification device, is done in the identification device itself.

The disadvantage of these known authorized access control or identification devices is that they use the same crypto code for authorized access to different objects. This is a disadvantage especially for objects which have a different life expectancy, such as a

motor vehicle and a house, for example. When one of the two objects is changed, the crypto code that is used must be reprogrammed in the identification device or the object's transceiver, which involves a great deal of effort, so that, for example, if a new motor vehicle is acquired, the motor vehicle's changed crypto code can also be used for controlling authorized access to a house. This is tedious and expensive, especially if authorized access control queries are supposed to be performed for several objects with a single such identification device. Furthermore, it is considered unsatisfactory for an authorized access control query for different objects to be performed using one and the same code or, as is the case in DE 195 33 309 A1, with a code that coincides at least partially.

Starting from the prior art which has been discussed, the invention is therefore based on the task of proposing a keyless authorized access control device of the type mentioned at the beginning and an identification device for such an authorized access control device which avoid the disadvantages shown in the prior art.

This task is solved according to the claimed invention by the fact that each identification device for each object comprises a memory chip containing an encoding attuned to this object, with the identification device having a modular construction and having a base module with the means of electric / electronic transmission and reception necessary for communication with the objects' transceivers, and at least one object module that is connected to the base module through an interface and that has such a memory chip.

The identification device according to the invention, and accordingly also the authorized access control device comprising such an identification device, is characterized by a modular construction in which the necessary means of electric / electronic transmission and reception (hardware) is arranged in a base module. The base module comprises one or more interfaces for connecting a chip containing an encoding, which can be a memory chip, for example. The number of such interfaces which the base module has can correspond to the number of different crypto codes to be transmitted with the identification device, or the base module can have one memory chip of its own and one or more other memory chips can be connected through the interfaces.

The modular construction of the identification device, which allows a single authorized access control device to have several identification devices, makes it possible, by appropriate configuration of one or more interfaces, to organize such an identification device so that it can be used to set up and especially to change the authorization of use through the authorized access control device. Here different encodings are used to communicate with different objects' transceivers. It is also entirely possible to use a single code for an access authorization query for different objects. For the case in which one of the objects is replaced, all that is necessary is to replace the chip containing the encoding on the identification device.

One embodiment provides that the base module also has the buttons necessary for operating and activating the identification device assigned to it. Another embodiment provides that a chip containing the encoding also has buttons for activating the identification device assigned to it. In the latter case, the number of activation buttons that an identification device has corresponds to the number of different codes to send. It is expedient for them to have a different switching feel and/or a different ergonomics, so that the different buttons can be felt by a user.

The invention is described below using a sample embodiment which refers to the attached figures. The figures are as follows:

Figure 1: A schematic three-dimensional illustration of an identification device having a modular construction for a keyless authorized access control device;

Figure 2: The base module of the identification device shown in Figure 1; and

Figure 3: Two object modules for the identification device shown in Figure 1.

In a keyless authorized access control device, an identification device 1 gives a user authorized access to several objects. Working together with the identification device 1 are transceivers which are configured for objects and with which the means of transmission and reception of the identification device communicate and exchange a code to establish the authorized access.

Identification device 1 has a modular construction and comprises a base module 2, which is shown once again by itself in Figure 2. Base module 2 of identification device 1 contains the necessary means of electric / electronic transmission and reception to enable communication with the transceivers which are configured for objects. Identification device 1 also comprises object modules 3, 4; object module 4 is shown again by itself in Figure 3 from its top and from its bottom. Object modules 3, 4 are made so that each can be pushed into a corresponding object module receptacle 5, 6 of the base module 2, and held locked or latched in it. Each receptacle 5, 6 of base module 2 has an interface (not shown), which a memory chip assigned to each object module 3, 4 engages into and makes electrical contact with when object module 3, 4 is inserted into the respective receptacle 5, 6. To accomplish this, each object module 3, 4 has a plug-and-socket connector, which is marked with reference number 7 in object module 4. The memory chip itself can be integrated in plug-and-socket connector 7, or it can be located at another place in an object module 3, 4 and electrically connected with plug-and-socket connector 7.

Each memory chip has a certain crypto code stored in it, which, depending on what object or object's transceivers communication should take place with, is implemented in the transmission protocol. Therefore, with the identification device 1 shown in the figures it is possible to transmit two different crypto codes.

In the sample embodiment shown, the buttons 8, 9, 10, 11 necessary for activating identification device 1 are also part of object modules 3, 4. Buttons 8, 9, and 10, 11 are made ergonomically different, so that a user of identification device 1 can tell without looking which buttons 8, 9, 10, 11 he is about to press. The interfaces of base module 2 and the memory chip's interface that is engaged with it are made in an appropriate way so that buttons 8, 9, 10, 11 are also electrically connected with the base module 2 or with the means of transmission and reception contained in it.

The description of the invention clearly shows that the identification device which has been explained makes it is easy for object modules to be exchanged, which also allows the respective encoding to be exchanged. The memory chips can be part of an object module, as shown in the figures, or that they can be plugged into the identification device by opening its housing. Such an embodiment allows an identification device to be equipped with many different memory chips, to make it possible to carry out an access authorization query on many different objects with different encodings. In such a case it can be provided that in each case a single transmission protocol is transmitted with all encodings contained in the identification device, and that the object's transceiver

recognizes authorized access if the code assigned to this transceiver is received at any place within the protocol. It can also be provided that to shorten the transmission protocol the identification device has a menu mode to select a certain object before pressing the transmit button, to make it possible to transfer only the code assigned to this object or the transmission protocol assigned to the object.

List of Reference Numbers

- | | |
|----|---------------------------|
| 1 | Identification device |
| 2 | Base module |
| 3 | Object module |
| 4 | Object module |
| 5 | Object module receptacle |
| 6 | Object module receptacle |
| 7 | Plug-and-socket connector |
| 8 | Button |
| 9 | Button |
| 10 | Button |
| 11 | Button |

Claims

1. Keyless authorized access control device with at least two transceivers, each of which is assigned to a certain object, and with one or more identification devices (1), each being designed to communicate with the transceivers assigned to the objects, **characterized by the fact** that each identification device (1) for each object comprises a memory chip containing an encoding attuned to this object, with the identification device (1) having a modular construction and having a base module (2) with the means of electric / electronic transmission and reception necessary for communication with the objects' transceivers, and at least one object module (3, 4) that is connected to the base module (2) through an interface and that has such a memory chip.
2. Authorized access control device according to Claim 1, **characterized by the fact** that the base module (2) also has a memory chip containing an encoding attuned to an object.
3. Authorized access control device according to Claims 1 or 2, **characterized by the fact** that the base module has the buttons necessary for operating an identification device.
4. Authorized access control device according to Claims 1 or 2, **characterized by the fact** that the buttons (8, 9, 10, 11) necessary for operating identification device (1) are part of object module (3, 4).
5. Authorized access control device according to one of Claims 1 through 4, **characterized by the fact** that the object modules (3, 4) have other electronic subassemblies relating to this object for carrying out object-specific communication with the transceiver belonging to this object.
6. Identification device for a keyless authorized access control device for communicating with objects' transceivers, **characterized by the fact** that the identification device (1) for each object comprises a memory chip containing an encoding attuned to this object, with the identification device (1) having a modular construction and having a base module (2) with the means of electric / electronic transmission and reception necessary for communication with the objects' transceivers, and at least one object module (3, 4) that is connected to the base module (2) through an interface and that has such a memory chip.
7. Authorized access control device according to Claim 6, **characterized by the fact** that the base module (2) also has a memory chip containing an encoding attuned to an object.
8. Authorized access control device according to Claims 6 or 7, **characterized by the fact** that the base module has the buttons necessary for operating an identification device.
9. Authorized access control device according to Claims 6 or 7, **characterized by the fact** that the buttons (8, 9, 10, 11) necessary for operating identification device (1) are part of object module (3, 4).
10. Authorized access control device according to one of Claims 6 through 9, **characterized by the fact** that the object modules (3, 4) have other electronic

subassemblies relating to this object for carrying out object-specific communication with the transceiver belonging to this object.

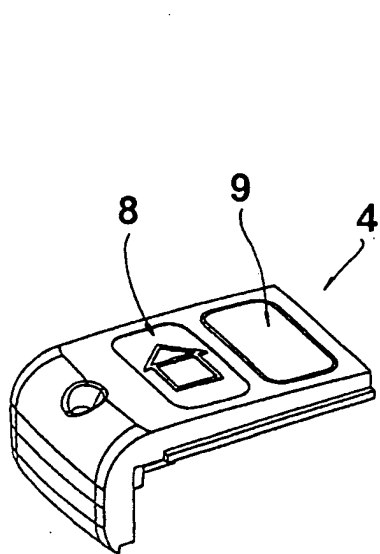


Fig. 3

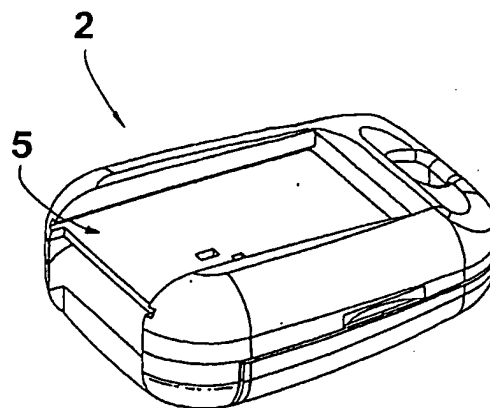


Fig. 2

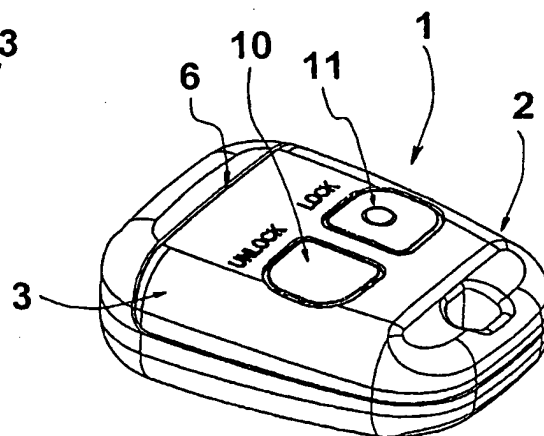
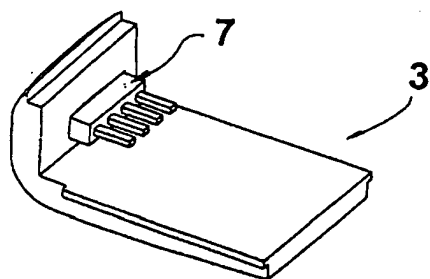


Fig. 1